

CLAIMS

What Is Claimed Is:

1. A modular prosthesis for replacing an end portion of a bone, the prosthesis comprising:
 - a stem dimensioned to be received in the intramedullary canal of the bone;
 - a head having an outer wall defining an interior space dimensioned such that the head can be placed over an end portion of the stem, the outer wall having at least one opening, the outer wall being dimensioned such that the head can be moved in an axial direction in relation to an axis of the stem and the head can be moved in a transverse direction in relation to the axis of the stem when the head is placed over the end portion of the stem; and
 - a screw dimensioned to be arranged in each opening,wherein each screw is suitable for contacting the end portion of the stem when arranged in its associated opening to secure the head to the stem by constraining movement of the head in the axial direction and in the transverse direction.
2. The prosthesis of claim 1 wherein:
 - each screw is a self-tapping screw suitable for tapping into the end portion of the stem, and
 - each screw is inserted to a depth below a surface of the end portion of the stem to secure the head to the stem.
3. The prosthesis of claim 1 wherein:
 - each opening is in a lateral direction in relation to the axis of the stem.
4. The prosthesis of claim 1 wherein:
 - the outer wall of the head has three openings, and two of the openings are on opposed sides of the wall.
5. The prosthesis of claim 1 wherein:

the outer wall is dimensioned such that the head can be moved in a second transverse direction in relation to the axis of the stem at an angle to the transverse direction when the head is placed over the end portion of the stem, and

each screw is suitable for contacting the end portion of the stem when arranged in its associated opening to constrain movement of the head in the second transverse direction.

6. The prosthesis of claim 1 wherein:
the prosthesis replaces a radial head.

7. The prosthesis of claim 6 wherein:
the head of the prosthesis is elliptical, and
the outer wall of the head of the prosthesis includes a concave surface dimensioned to interface with the capitellum of the humerus and a periphery surface dimensioned to interface with the radial notch of the ulna when the head of the prosthesis is secured to the stem.

8. A modular prosthesis for replacing an end portion of a bone, the prosthesis comprising:
a stem dimensioned to be received in the intramedullary canal of the bone;
a head having an outer wall defining an interior space dimensioned such that the head can be placed over an end portion of the stem, the outer wall having at least one opening, the outer wall being dimensioned such that the head can be moved in a first transverse direction in relation to an axis of the stem and the head can be moved in a second transverse direction in relation to the axis of the stem at an angle to the first transverse direction when the head is placed over the end portion of the stem; and
a screw dimensioned to be arranged in each opening,
wherein each screw is suitable for contacting the end portion of the stem when arranged in its associated opening to secure the head to the stem by constraining movement of the head in the first transverse direction and in the second transverse direction.

9. The prosthesis of claim 8 wherein:
the prosthesis replaces a radial head.
10. The prosthesis of claim 9 wherein:
the head of the prosthesis is elliptical, and
the outer wall of the head of the prosthesis includes a concave surface dimensioned to interface with the capitellum of the humerus and a periphery surface dimensioned to interface with the radial notch of the ulna when the head of the prosthesis is secured to the stem.
11. A prosthesis for replacing an end portion of a bone, the prosthesis comprising:
a head, a stem extending away from the head, and at least two screws,
wherein the stem is dimensioned to be received in the intramedullary canal of the bone, the prosthesis includes a first channel extending diagonally from a first side of the head to an opposite second side of the stem, the prosthesis includes a second channel extending diagonally from a second side of the head to an opposite first side of the stem, a screw is associated with and arranged in each channel such that the prosthesis can be secured to the bone by driving each screw arranged in each channel into the bone.
12. The prosthesis of claim 11 wherein:
each screw has a length greater than its associated channel.
13. The prosthesis of claim 11 wherein:
the prosthesis replaces a radial head.
14. The prosthesis of claim 13 wherein:
the head of the prosthesis is elliptical, and
the outer wall of the head of the prosthesis includes a concave surface dimensioned to interface with the capitellum of the humerus and a periphery

surface dimensioned to interface with the radial notch of the ulna when the prosthesis is secured to the bone.

15. An apparatus for guiding the resection of the end of a bone, the apparatus comprising:

an intramedullary alignment shaft dimensioned to be received in the intramedullary canal of the bone, the shaft having an axis; and

a movable cutting guide suitable for placing on the shaft, the cutting guide having base for placing on the shaft and a wall extending laterally away from the base in a direction of the shaft axis, the wall terminating in an outermost cutting guide edge for guiding the resection of the end of the bone.

16. The apparatus of claim 15 wherein:

the intramedullary alignment shaft is connected to a concave bearing surface dimensioned to conform to the shape of an end surface of another bone adjacent the bone being resected.

17. The apparatus of claim 15 wherein:

the base comprises a pair of legs, and

the legs are spaced apart such that an inner surface of each leg contacts the shaft when the cutting guide is placed on the shaft.

18. The apparatus of claim 17 wherein:

the intramedullary alignment shaft includes a circumferential groove in an end portion of the shaft, the groove being dimensioned to contact the inner surface of each leg when the cutting guide is placed on the shaft.

19. An apparatus for guiding the resection of the end of a bone, the apparatus comprising:

an alignment shaft dimensioned to extend from an opposite end of the bone to the end of the bone being resected, the shaft having an axis; and

a movable cutting guide suitable for placing on an end portion of the shaft, the cutting guide having base for placing on the end portion of the shaft and a wall extending laterally away from the base in a direction of the shaft axis, the wall terminating in an outermost cutting guide edge for guiding the resection of the end of the bone.

20. The apparatus of claim 19 wherein:

the end portion of the alignment shaft is connected to a concave bearing surface dimensioned to conform to the shape of an end surface of another bone adjacent the bone being resected.

21. The apparatus of claim 19 wherein:

the end portion of the alignment shaft includes a cutting guide mounting section that is transversely offset from the alignment shaft.

22. The apparatus of claim 21 wherein:

the cutting guide mounting section is dimensioned to be arranged along an axis of the intramedullary canal of the bone when in use.

23. The apparatus of claim 19 wherein:

the base comprises a pair of legs, and
the legs are spaced apart such that an inner surface of each leg contacts the end portion of the shaft when the cutting guide is placed on the shaft.

24. A kit for plugging an open end of an intramedullary canal of a bone to restrict the flow of a cement used to fix a prosthesis stem inserted into the open end of the canal, the kit comprising:

a plug of medical grade material, the plug being dimensioned to seal the intramedullary canal at a location below an end of the prosthesis stem and prevent flow of cement beyond the location; and

an insertion instrument for placing the plug in the intramedullary canal, the insertion instrument being dimensioned to be received in the intramedullary canal

of the bone, the insertion instrument having a lateral crosspiece to facilitate placement of the plug at a predetermined depth in the intramedullary canal.

25. The kit of claim 24 wherein:
the plug has a mounting hole, and
the insertion instrument has a lower end dimensioned to engage the mounting hole when placing the plug in the intramedullary canal.

26. The kit of claim 24 wherein:
the crosspiece is movable on the insertion instrument.